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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/639,943	08/13/2003	Richard H. Boivie	YOR920030260US1 (16780)	6976
23389 7590 03/12/2007 SCULLY SCOTT MURPHY & PRESSER, PC 400 GARDEN CITY PLAZA SUITE 300 GARDEN CITY, NY 11530			EXAMINER LANIER, BENJAMIN E	
			ART UNIT 2132	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE			MAIL DATE	
3 MONTHS			03/12/2007	
			DELIVERY MODE PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/639,943

Applicant(s)

BOIVIE ET AL.

Examiner

Benjamin E. Lanier

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☒ Claim(s) 5-11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment file 21 February 2007 amend claims 1, 14, and 25. Applicant's amendment has been fully considered and entered.

Response to Arguments

2. Applicant's argument that the Foster references do not disclose "a network-attached storage device," has been fully considered and is persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Burns, U.S. Patent No. 6,405,315.
3. Applicant's argument that the specification describes checksums is not persuasive to overcome an antecedent basis rejection of the claims. A checksum was never defined in the **claims** antecedent basis prior to the limitation in question.

Claim Objections

4. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.
5. A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).
6. Claim 5 depends from claim 3 and is separated by claim 4, which is not dependent upon claim 3. Claims 5-11 are objected to.

Claim Rejections - 35 USC § 112

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7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 23, 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 23 recites the limitation "a written data block's version number and checksum" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim. A checksum was never defined as part of a data blocks data structure in the tree. For the purposes of examination, previously defined 'integrity value' will used instead.

10. Claim 31 recites the limitation "a written data block's version number and checksum" in line 3. There is insufficient antecedent basis for this limitation in the claim. A checksum was never defined as part of a data blocks data structure in the tree. For the purposes of examination, previously defined 'integrity value' will used instead.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1, 2, 12-15, 25, 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Burns, U.S. Patent No. 6,405,315. Referring to claims 1, 14, 25, Burns discloses a decentralized remotely encrypted file system wherein a network storage device is used to store encrypted files for network clients (Figure 2 & Col. 3, lines 44-52 & Col. 5, lines 25-45), which meets the

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limitation of a network-attached storage device for storing encrypted data. A network client must encrypt the data prior to transmission to the network storage device for storage (Col. 3, lines 49-52 & Col. 5, lines 40-45), which meets the limitation of means at a client device for encrypting data prior to sending data blocks to said network-attached storage device. The encrypted data includes a hash of the data to detect corruption or unauthorized changes to the data (Figure 5 & Col. 8, lines 5-10), which meets the limitation of said encrypting means protecting confidentiality and integrity of data blocks sent to said network-attached storage device, means for generating an integrity value corresponding to one or more data blocks, said integrity value comprising information for preventing modification, relocation and replay of data for each data block sent to said network-attached storage device, means for storing said integrity values of one or more data blocks. When a client requests access to the stored data, the data is sent to the network client, decrypted, hashed, and verified by comparing the calculated hash with the previously calculated hashed that was stored with the data (Col. 8, lines 5-10 & Col. 10, line 60 – Col. 11, line 17), which meets the limitation of means at said client device for receiving and decrypting data blocks received from said network-attached storage device, means for performing an integrity check at said client device utilizing stored integrity values corresponding to one or more said data blocks received from said network-attached storage device, wherein said integrity check protects the integrity of data blocks stored in said network-attached storage devices.

Referring to claims 2, 15, 26, Burns discloses a network client must encrypt the data prior to transmission to the network storage device for storage (Col. 3, lines 49-52 & Col. 5, lines 40-

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45), which meets the limitation of encryption means generates encrypted cipher text data blocks that are a function of plaintext data included in said data block and a first encryption key.

Referring to claim 12, Burns discloses that the network storage device includes disk drives for storage (Col. 5, lines 7-8), which meets the limitation of said storage device comprises non-volatile storage.

Referring to claim 13, Burns discloses that the network storage device is remotely located from said client device, said encrypted blocks being written across a network link (Figure 1).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. Claims 3, 5-11, 16, 18-24, 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns, U.S. Patent No. 6,405,315, in view of Pang, U.S. Patent No. 6,931,543, further in view of Tatebayashi, U.S. Patent No. 5,124,117. Referring to claims 3, 16, 27, Burns discloses a decentralized remotely encrypted file system wherein a network storage device is

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used to store encrypted files for network clients (Figure 2 & Col. 3; lines 44-52 & Col. 5, lines 25-45). Burns discloses that timestamps are included and associated with the encrypted data to identify when the data was last modified and/or accessed (Figure 5 & Col. 12, lines 66-67).

Burns does not disclose utilizing an address location for the data or a version number that indicates a block write increment in the encryption process. Pang discloses a programmable logic device for decrypting data that utilizes address information for the encryption and decryption of the data (Col. 3, lines 57-62), which meets the limitation of said encryption means implements a whitening value which is a function of a second encryption key, an address location for said storage block, said encryption means further generating cipher text data blocks that are additionally a function of said whitening value. Tatebayashi discloses a cryptographic system wherein timestamps are utilized in the encryption process of data (Col. 14, lines 11-15), which meets the limitation of encryption means implements a whitening value which is a function of a version number indicating a block write increment. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the location address information of the data and timestamps, as it is stored in the network storage device in Burns, in order to prevent attacks that relocate portions of the encrypted bitstream such that when they are unencrypted they are placed into visible portions of the device not intended by the designer as taught by Pant (Col. 3, lines 55-58) and to prevent attacking users from listening to communications and conspiring to obtain the encryption key as taught by Tatebayashi (Col. 13, lines 9-31 & Col. 14, lines 11-15).

Referring to claims 5, 18, Burns discloses that each block of data in the file structure of the network storage device has a hash value (Figure 5 & Col. 8, lines 5-11), which meets the

limitation of means for storing said integrity values of written data blocks further includes means for generating an integrity tree structure, said integrity structure storing integrity values corresponding to each disk block written to said storage device.

Referring to claims 6, 19, 28, Burns discloses that the entries of the file structure also contain meta data (Col. 2, lines 30-33 & Col. 5, lines 25-28), which meets the limitation of said integrity tree comprises a hierarchical data structure, said hierarchical data structure including two or more layers of integrity data structures, each successive layer of integrity data structures including meta-data protecting integrity of data at an immediate prior layer.

Referring to claims 7, 8, 20, 21, 29, Burns discloses that the entries of the file structure also contain meta data (Col. 2, lines 30-33 & Col. 5, lines 25-28). Burns does not disclose utilizing an address location for the data or a version number that indicates a block write increment in the encryption process. Pang discloses a programmable logic device for decrypting data that utilizes address information for the encryption and decryption of the data (Col. 3, lines 57-62), which meets the limitation of said encryption means implements a whitening value which is a function of a second encryption key, an address location for said storage block, said encryption means further generating cipher text data blocks that are additionally a function of said whitening value. Tatebayashi discloses a cryptographic system wherein timestamps are utilized in the encryption process of data (Col. 14, lines 11-15), which meets the limitation of said hierarchical data structure includes said written encrypted data blocks at a first layer, and a succeeding layer of meta data blocks, each meta data block including data structures representing a plurality of disk blocks written at said first layer, each meta data block data structure comprising an integrity value and a version number pair for each of said plurality of disk blocks,

said integrity tree includes a succeeding layer of higher level meta data blocks for protecting a layer of meta data blocks below, each higher level meta data block comprising data structures representing a plurality of meta data blocks, each higher level meta data block data structure comprising an integrity value and version number pair generated for each of said plurality of meta data blocks. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the location address information of the data and timestamps, as it is stored in the network storage device in Burns, in order to prevent attacks that relocate portions of the encrypted bitstream such that when they are unencrypted they are placed into visible portions of the device not intended by the designer as taught by Pant (Col. 3, lines 55-58) and to prevent attacking users from listening to communications and conspiring to obtain the encryption key as taught by Tatebayashi (Col. 13, lines 9-31 & Col. 14, lines 11-15).

Referring to claims 9, 22, Burns discloses that the file structure has a hash for each entry, which could be a directory (Figure 5 & Col. 7, lines 11-22) such as the root directory (Col. 10, lines 20-26), which meets the limitation of a top layer of said hierarchical data structure includes a root data structure for protecting integrity of all content written to said storage device.

Referring to claims 10, 11, 23, 24, 30-32, Burns discloses that the file system data can be updated (Col. 5, lines 40-45), means comparing integrity of data blocks to be read on a path from said root data structure via successive higher meta data blocks and meta data block layers until a desired data block at a first layer is read. Burns does not disclose utilizing an address location for the data or a version number that indicates a block write increment in the encryption process. Pang discloses a programmable logic device for decrypting data that utilizes address information for the encryption and decryption of the data (Col. 3, lines 57-62), which meets the limitation of

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said encryption means implements a whitening value which is a function of a second encryption key, an address location for said storage block, said encryption means further generating cipher text data blocks that are additionally a function of said whitening value. Tatebayashi discloses a cryptographic system wherein timestamps are utilized in the encryption process of data (Col. 14, lines 11-15), which meets the limitation of writing a data block to said storage device, said writing including updating a written data block's version number and checksum in the associated meta data blocks, and, said checksum and version number value updating being performed at each successive meta data layer corresponding to said written data block, including updating performed at said root data structure. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the location address information of the data and timestamps, as it is stored in the network storage device in Burns, in order to prevent attacks that relocate portions of the encrypted bitstream such that when they are unencrypted they are placed into visible portions of the device not intended by the designer as taught by Pant (Col. 3, lines 55-58) and to prevent attacking users from listening to communications and conspiring to obtain the encryption key as taught by Tatebayashi (Col. 13, lines 9-31 & Col. 14, lines 11-15).

16. Claims 4, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns, U.S. Patent No. 6,405,315, in view of Aiello, U.S. Patent No. 5,608,801. Referring to claims 4, 17, Burns discloses a decentralized remotely encrypted file system wherein a network storage device is used to store encrypted files for network clients (Figure 2 & Col. 3, lines 44-52 & Col. 5, lines 25-45). Burns does not disclose using DES or AES encryption. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the DES algorithm to

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encrypt the data of Burns because DES provides a reasonable fast and commercially available encryption algorithm as taught in Aiello (Col. 3, lines 55-57).

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin E. Lanier whose telephone number is 571-272-3805. The examiner can normally be reached on M-Th 7:30am-5:00pm, F 7:30am-4pm.

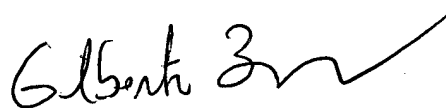
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on 571-272-3799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Benjamin E. Lanier



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